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(54) **METHODS AND SYSTEMS FOR PROVIDING A MOBILE OFFICE PHONE**

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H04M 7/00	(2006.01)
H04M 3/54	(2006.01)
H04W 4/00	(2009.01)
H04W 4/14	(2009.01)
H04M 1/253	(2006.01)
H04M 1/725	(2006.01)
H04W 84/16	(2009.01)

(52) **U.S. Cl.**

CPC ***H04M 7/0024*** (2013.01); ***H04M 1/2535*** (2013.01); ***H04M 1/72552*** (2013.01); ***H04M 3/546*** (2013.01); ***H04W 4/001*** (2013.01); ***H04W 4/14*** (2013.01); *H04W 84/16* (2013.01)

(58) **Field of Classification Search**

USPC 455/555, 556.1

See application file for complete search history.

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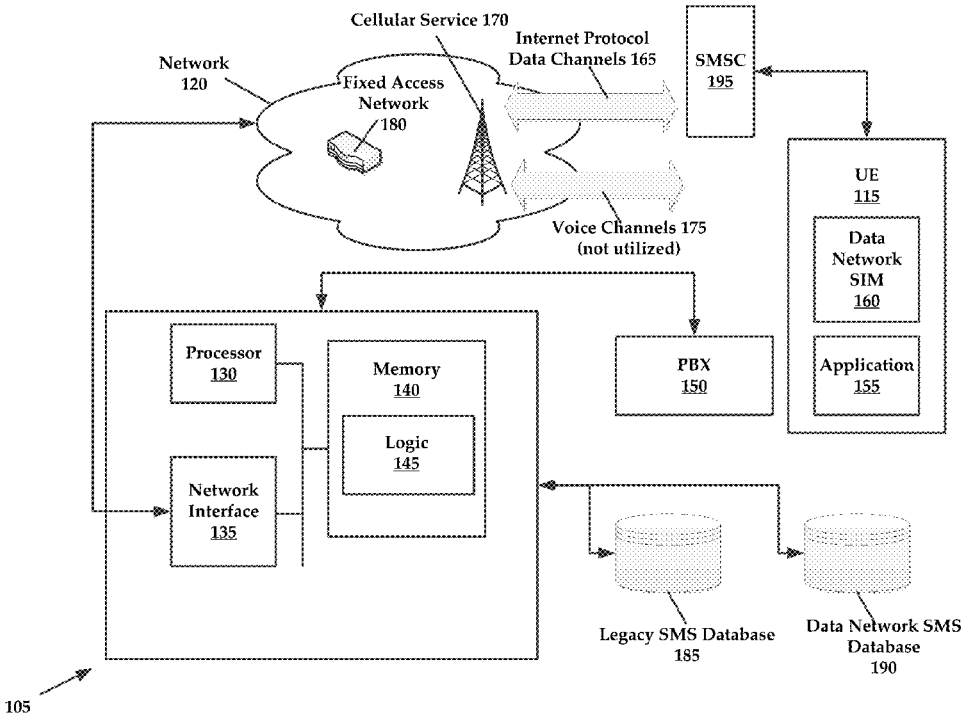
(57) **ABSTRACT**

Methods and systems for providing a mobile office phone are provided herein. In one embodiment a system includes a private branch exchange (PBX), a server configured to integrate user equipment (UE) onto the PBX by attaching a mobile telephone number of the UE as an extension on the PBX, and a session initiation protocol (SIP) server coupled with the server and PBX that allows the UE to place and receive calls and messages over data channels of a network.

11 Claims, 4 Drawing Sheets



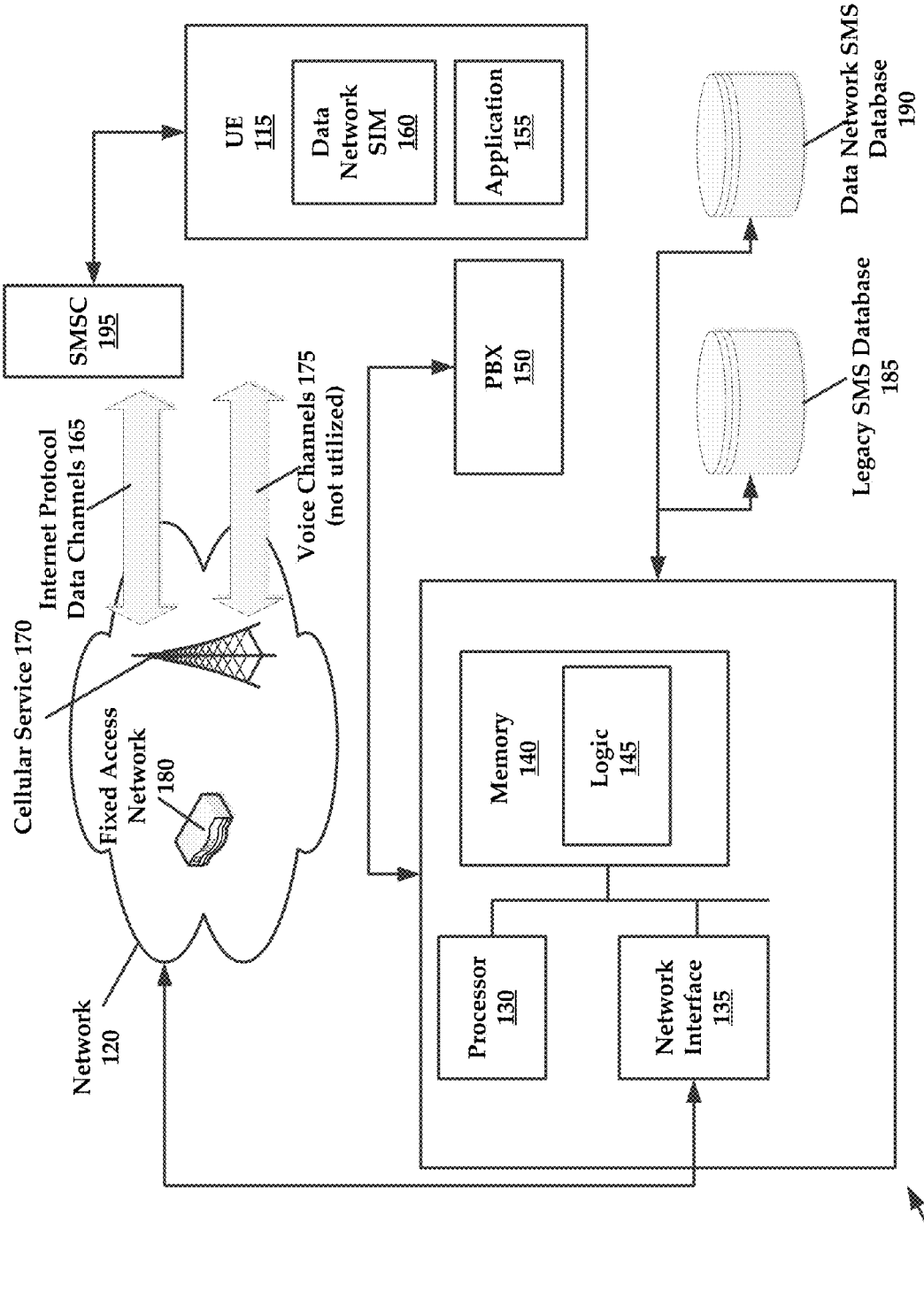

UE
115
Data Network SIM
160
Application
155
Data Network SMS Database
190
SMSC
195
PBX
150
Legacy SMS Database
185
Internet Protocol Data Channels 165
Voice Channels 175 (not utilized)
Cellular Service 170
Fixed Access Network
180
Memory
140
Logic
145
Processor
130
Network Interface
135
Network
120
105

FIG. 1

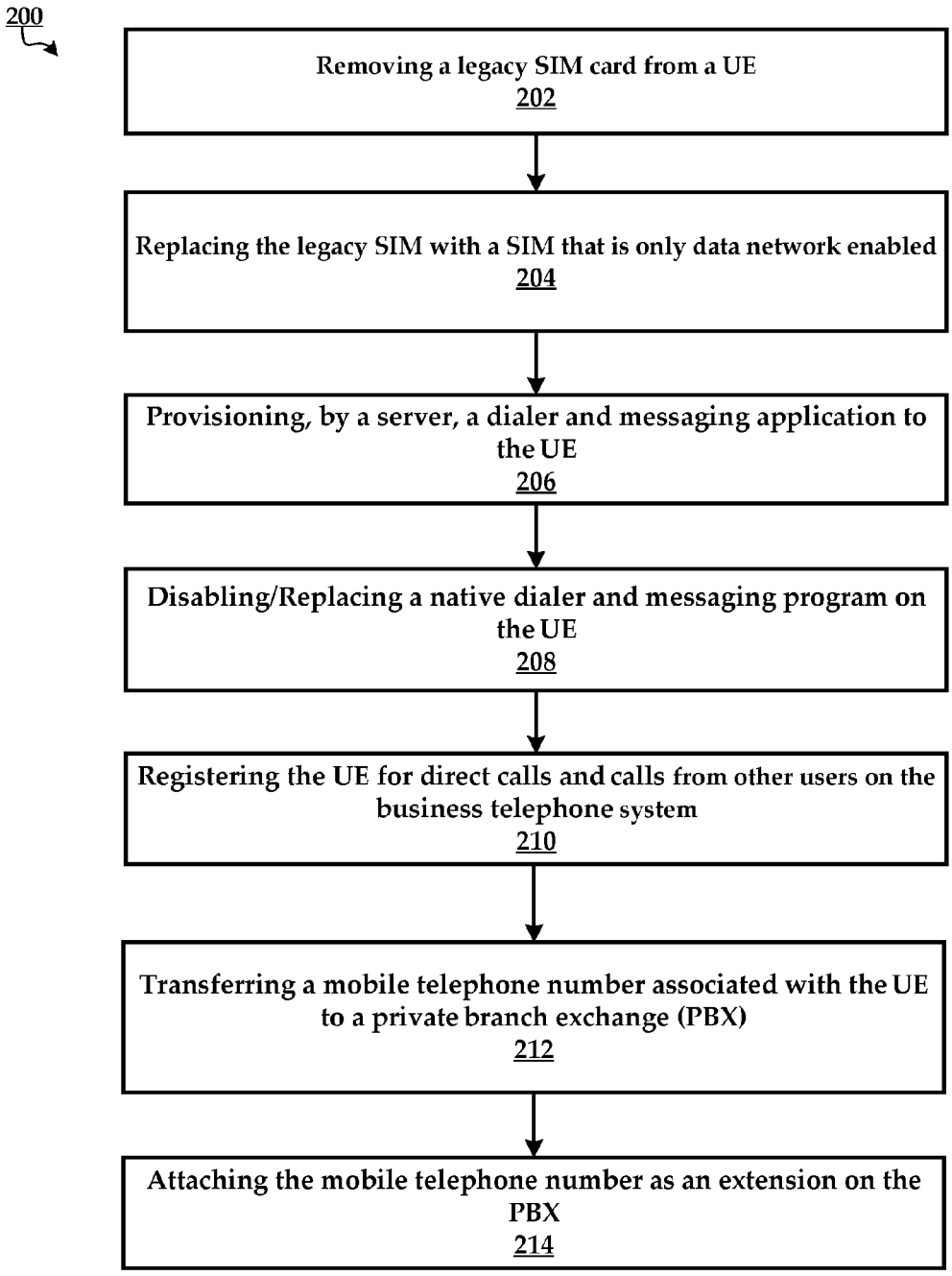

200
Removing a legacy SIM card from a UE
202
Replacing the legacy SIM with a SIM that is only data network enabled
204
Provisioning, by a server, a dialer and messaging application to the UE
206
Disabling/Replacing a native dialer and messaging program on the UE
208
Registering the UE for direct calls and calls from other users on the business telephone system
210
Transferring a mobile telephone number associated with the UE to a private branch exchange (PBX)
212
Attaching the mobile telephone number as an extension on the PBX
214

FIG. 2

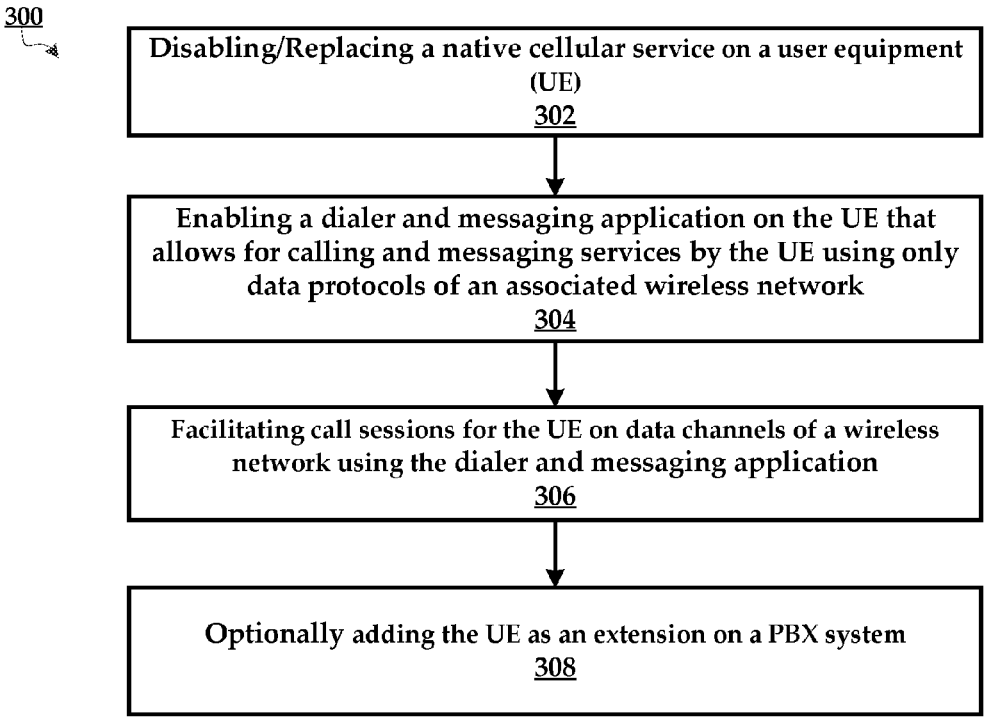

300
Disabling/Replacing a native cellular service on a user equipment (UE)
302
Enabling a dialer and messaging application on the UE that allows for calling and messaging services by the UE using only data protocols of an associated wireless network
304
Facilitating call sessions for the UE on data channels of a wireless network using the dialer and messaging application
306
Optionally adding the UE as an extension on a PBX system
308

FIG. 3

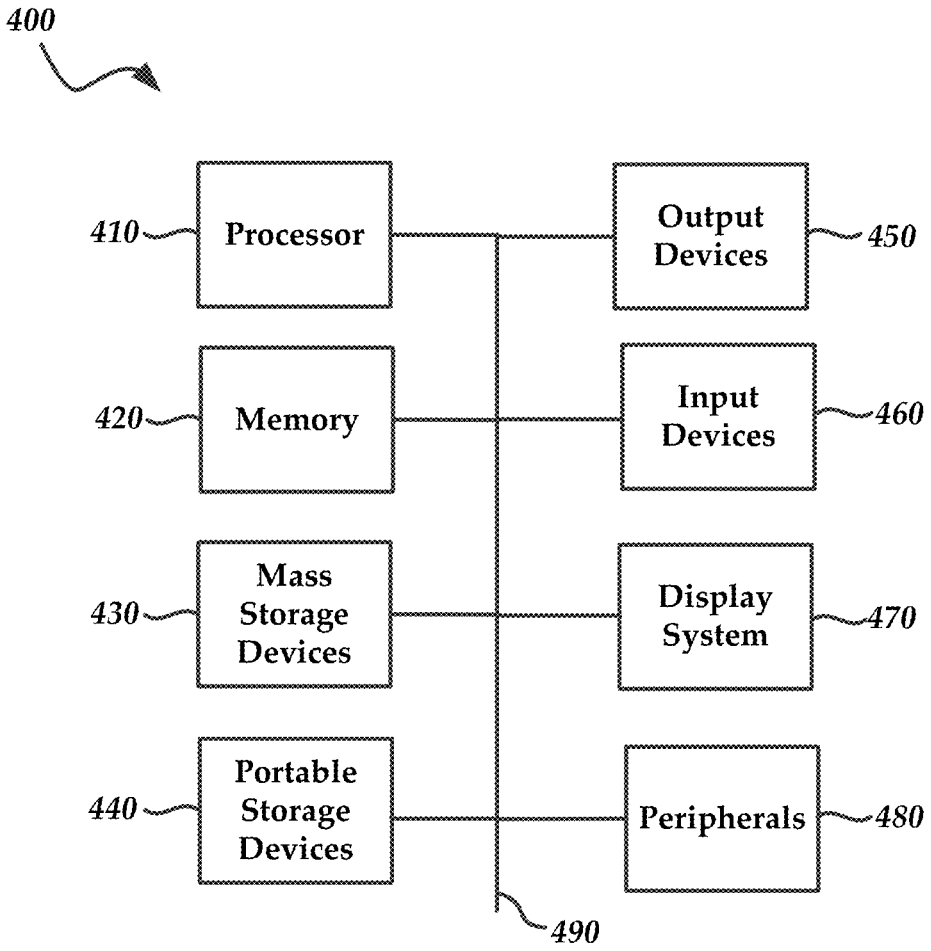

400
410
Processor
420
Memory
430
Mass Storage Devices
440
Portable Storage Devices
490
Output Devices
450
Input Devices
460
Display System
470
Peripherals
480

FIG. 4

METHODS AND SYSTEMS FOR PROVIDING A MOBILE OFFICE PHONE

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the priority benefit of U.S. Provisional Patent Application Ser. No. 62/012,144, filed on Jun. 13, 2014, which is hereby incorporated by reference herein in its entirety, including all references and appendices cited therein.

FIELD OF THE TECHNOLOGY

The present technology relates generally to telecommunications, and, more particularly, to systems and methods for directly connecting a mobile communication device to an office phone system, allowing the user of the mobile communication device to be accessible from anywhere. Also, the present technology can be utilized to allow the mobile device to communicate using voice and messaging over data channels of wireless networks.

BACKGROUND OF THE DISCLOSURE

Businesses typically have separate voice and data networks and different wireline and wireless service providers. Furthermore, business activity is increasingly mobile, conducted outside of offices, with employees often telecommuting from a home office or working on the road. In the sales industry, service people engineer sales through making and receiving a series of calls to customers and company contacts. Mobile cellphone expenses remain high despite economizing efforts to reduce the quantity of calls and high mobile phone bills, and mobile phones are still primarily being used on mobile networks when IP/digital phones are being used on private branch exchange (PBX) platforms. Additionally, competing priorities lead to communication bottlenecks, sales delays, and increased stress. By integrating mobile communication devices and office phone systems, a user's mobile communication device may become an extension of the office phone system for more direct access to and from important company and customer contacts and access to PBX functionalities. The systems and methods of the present disclosure may decrease mobile cellphone bills for businesses, eliminate mobile long distance costs, and ensure that priority calls are handled more efficiently while other calls are responded to more immediately.

SUMMARY

According to some embodiments, the present technology is directed to a method for integrating a user equipment (UE) with a business telephone system, comprising: (a) provisioning, by a server, a dialer and messaging application to the UE; (b) replacing a native dialer and messaging program on the UE by the dialer and text messaging application, wherein the UE comprises an installed data network enabled subscriber identity module (SIM); (c) registering the UE for direct calls and calls from other users on a business telephone system; (d) transferring a mobile telephone number associated with the UE to a private branch exchange (PBX); and (e) attaching the mobile telephone number as an extension on the PBX.

According to some embodiments, the present technology is directed to a method, comprising: (a) replacing a native cellular service on a user equipment (UE); and (b) enabling a dialer and messaging application on the UE that allows for calling and messaging services by the UE using only Internet data protocols of an associated wireless network.

According to some embodiments, the present technology is directed to a system, comprising: (a) a private branch exchange (PBX) that is enabled to operate with session initiation protocol (SIP) protocols; (b) a server configured to integrate user equipment (UE) onto the PBX by attaching a mobile telephone number of the UE as an extension on the PBX; and (c) an SIP server coupled with the server and PBX that allows the UE to place and receive calls and messages over Internet data channels of a network.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, where like reference numerals refer to identical or functionally similar elements throughout the separate views, together with the detailed description below, are incorporated in and form part of the specification, and serve to further illustrate embodiments of concepts that include the claimed disclosure, and explain various principles and advantages of those embodiments.

The methods and systems disclosed herein have been represented where appropriate by conventional symbols in the drawings, showing only those specific details that are pertinent to understanding the embodiments of the present disclosure so as not to obscure the disclosure with details that will be readily apparent to those of ordinary skill in the art having the benefit of the description herein.

FIG. **1** is a schematic diagram of an exemplary computing architecture that can be used to practice aspects of the present technology.

FIG. **2** is a flowchart of an example method for adding a UE as an extension on a PBX.

FIG. **3** is a flowchart of an example method for enabling call sessions and messaging for a UE over only the data channels of a network.

FIG. **4** is a diagrammatic representation of a computer system or a machine, within which a set of instructions for causing the machine to perform any one or more of the methodologies discussed herein, can be executed.

DETAILED DESCRIPTION

While this technology is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail several specific embodiments with the understanding that the present disclosure is to be considered as an exemplification of the principles of the technology and is not intended to limit the technology to the embodiments illustrated.

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the technology. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

It will be understood that like or analogous elements and/or components, referred to herein, may be identified throughout the drawings with like reference characters. It will be further understood that several of the figures are

merely schematic representations of the present technology. As such, some of the components may have been distorted from their actual scale for pictorial clarity.

FIG. **1** illustrates an exemplary architecture for practicing aspects of the present technology. The architecture comprises a server system, hereinafter "system **105**" that is configured to provide various functionalities, which are described in greater detail throughout this document. Generally the system **105** is configured to communicate with client devices, such as user equipment (UE) **115**. The UE **115** may include, for example, a Smartphone, a laptop, a computer, or other similar computing device. An example of a computing device that can be utilized in accordance with the present technology is described in greater detail with respect to FIG. **4**.

The system **105** may communicatively couple with the UE **115** via a public or private network, such as network **120**. Suitable networks may include or interface with any one or more of, for instance, a local intranet, a PAN (Personal Area Network), a LAN (Local Area Network), a WAN (Wide Area Network), a MAN (Metropolitan Area Network), a virtual private network (VPN), a storage area network (SAN), a frame relay connection, an Advanced Intelligent Network (AIN) connection, a synchronous optical network (SONET) connection, a digital T1, T3, E1 or E3 line, Digital Data Service (DDS) connection, DSL (Digital Subscriber Line) connection, an Ethernet connection, an ISDN (Integrated Services Digital Network) line, a dial-up port such as a V.90, V.34 or V.34bis analog modem connection, a cable modem, an ATM (Asynchronous Transfer Mode) connection, or an FDDI (Fiber Distributed Data Interface) or CDDI (Copper Distributed Data Interface) connection. Furthermore, communications may also include links to any of a variety of wireless networks, including WAP (Wireless Application Protocol), GPRS (General Packet Radio Service), GSM (Global System for Mobile Communication), CDMA (Code Division Multiple Access) or TDMA (Time Division Multiple Access), cellular phone networks, GPS (Global Positioning System), CDPD (cellular digital packet data), LTE, GPRS, EDGE and 1×RT, 3G systems such as EV-DO, W-CDMA (including HSPA), as well as 4G systems that are deployed widely which utilize HSPA+, WIMAX and RIM (Research in Motion, Limited) duplex paging network, Bluetooth radio, or an IEEE 802.11-based radio frequency network. The network **120** can further include or interface with any one or more of an RS-232 serial connection, an IEEE-1394 (Firewire) connection, a Fiber Channel connection, an IrDA (infrared) port, a SCSI (Small Computer Systems Interface) connection, a USB (Universal Serial Bus) connection or other wired or wireless, digital or analog interface or connection, mesh or Digi® networking.

The system **105** generally comprises a processor **130**, a network interface **135**, and a memory **140**. According to some embodiments, the memory **140** comprises logic (e.g., instructions) **145** that can be executed by the processor **130** to perform various methods. The system **105** can comprise a session initiation protocol (SIP) server, although other Internet telephony systems that follows SIP standard protocols as defined by the ITU (International Telecommunications Union), such as a PBX system that follows SIP standard protocols.

Generally, the present technology encompasses systems and methods for directly connecting a mobile communication device (UE **115**) to an office phone system (system **105**), allowing the user of the UE **115** to be accessible from to receive voice and data communications as described herein as if the user was located in the same premise as his colleagues.

In some embodiments, a UE **115** is a personal computer, handheld computing system, telephone, mobile computing system or any other computing system. Furthermore, users of the present systems and methods purchase a service comprising a data plan for their mobile communication devices to access a data network that will allow calling, roaming, or text messaging. A mobile Internet data plan may have various levels of data such as 500 MB, 2 GB, 6 GB, or other amount of data. In some embodiments, the calling, domestic roaming, or text message is unlimited.

In various embodiments, businesses have existing PBX telephone exchange systems **150**, which are most commonly analog or digital. The PBX **150** may be traditional, known to persons having ordinary skill in the art, or virtual Internet-based. In some embodiments, the virtual Internet-based PBX is a cloud-based hosted virtual PBX. The PBX **150** can also comprise an IP-based physical device hosted disposed on-site.

In some embodiments of the present disclosure, a user will insert a data network subscriber identity module (SIM) **160** into the user's programmable UE **115** and then install a mobile dialer and text messaging application **155** that will be stored on the UE **115**. In various embodiments, the SIM **160** will only utilize data channels **165** of a cellular service **170** (which can be included as a part of, or an embodiment of, the network **120**). To be sure, the data channels **165** utilized are Internet protocol based data channels. Thus, where communication over a data channel is described herein, it is to be understood that the communication occurs over one or more Internet protocol based data channels, whether the communication be voice or messaging.

The application **155** may disable and/or replace the native dialer and text messaging program on the UE **115**. Typically, the UE **115** would utilize the voice channels **175** of the cellular service **170** to conduct call sessions and the signaling channel to conduct short message service (SMS) messaging. Using the application **155**, call sessions and SMS messages can be conducted through the data channels **165** of the cellular service **170**. In some embodiments, if available, the UE **115** can utilize a fixed access data network **180**, such as a WiFi network. The UE **115** can actively select the fixed access data network **180** if it has a higher available bandwidth or service quality than the cellular service **170**.

In one embodiment, the system **105** comprises a short service message center (SMSC) **195** that is specifically configured to facilitate the transmission of SMS messages between end user devices (including the UE **115**) over the data channels **165** of the cellular service **170**. The system **105** can also comprise a short message peer-to-peer (SMPP) service, an extensible messaging and presence protocol (XMPP) service and/or Jabber server, as well as other services and/or controllers that are used to facilitate end user to end user messaging over a network.

The SMSC **195** can include an SMSC that is disposed as an intermediary between the system **105** and the cellular service **170**, which employs a standard SMSC to provide its own SMS service. For context, an SMS message is transmitted through a signaling channel of the SMSC of the cellular service **170**. The SMSC **195** of the present technology is implemented to mimic the functionality of the legacy/standard SMSC of the cellular service **170**. For example, in some embodiments, the SMSC **195** utilizes data network protocols such as HTTP to provide messaging services. The

SMSC **195** can simplify the standard method used by a legacy SMSC to provide SMS services.

For context, in a legacy SMSC, a Mobile Switching Center (MSC) is in charge of switching the connection over to the correct mobile station. The cellular service **170** also employs a Visitor Location Register (VLR) attached to each MSC, which helps to narrow down the exact location of the cell where the receiving handset is currently located. The message is then finally transferred to the corresponding Base Station System (BSS). The BSS consists of transceivers which send and receive information over the air, to and from the mobile station. This information is passed over the signaling channels so the mobile can receive messages even if a voice or data call is going on. The BSS is the final device that transmits the text message to the correct mobile.

Advantageously, the SMSC **195** can employ a data network SMS database **190** that can be used to store information regarding sending, receiving, delivery, and receipt of SMS messages. The SMSC **195** can be used to manage and route messages depending on the phone number/extension that the message was set to. As long as the UEs are connected to a network they can send and receive messages through the SMSC **195** without the use of base stations as is currently required in the cellular service **170**.

The present technology can be extended to allow for text messaging services across multiple environment, for example, through a web-based interface on a desktop to multiple platforms outside of the carrier SMS such as Google, AIM, MSN and others who utilize XAMPP technology. Additionally, various levels and types of encryption can be utilized to ensure security of SMS messages, which is currently unavailable to SMS services provided in the cellular service **170**.

In some embodiments, calls and SMS messages are not transmitted and received using an Unstructured Supplementary Service Data (USSD) protocol but through the dialer and messaging application **155** using a data transmission protocol on a data channel of a network, which could be a cellular service or a fixed access network.

Simultaneously, the application **155** may register the UE **115** for direct calls along with calls from other users on the system **105**. In one embodiment, a user's mobile telephone number, in various embodiments, would be transferred and attached as an extension on the business' PBX **150**. The user's mobile telephone number would be the direct inward dialing (DID) number, and the main phone number of the business would remain with the mobile telephone DID number attached as an extension on the business' PBX **150**. Call sessions occurring on the office phone system **105** would eliminate cellular airtime minutes and long distance costs, that would be incurred if the UE **115** were using the cellular service.

In various embodiments, the user may receive calls from another extension in the office phone system **105**. Additionally, the user may receive calls from outside callers who call the main business phone number and reach the user's extension through an auto attendant, hunt group, or agent group implemented through the system **105**. An outside caller may also reach the user by calling the user's extension directly.

The user would call outside callers, in some embodiments, in the same way the user was using the UE **115** before engaging the systems and methods of the present disclosure. Furthermore, whether the user makes or receives calls from his desk in the office, mobile phone, or at home, the service would be ubiquitous to the caller. In various embodiments, the user could set up whether the business name and office phone number or his personal name and telephone number would show up on the caller ID in the evening or during business hours, depending on preferences.

Furthermore, through the systems and methods of the present disclosure, the user may utilize PBX features on the UE **115** that may be customized to their business needs. Some exemplary PBX features accessible on the UE **115** include a single number to reach the user regardless of location, the ability to directly call another extension within the office, do not disturb, transfer, car park, intercom, paging, call recording, voicemail to e-mail messaging, one-button automatic call back, hunt group, auto attendant, and a myriad of other features.

In some embodiments, the system **105** will employ changes to the SMS databases that are used by the UE **115**. For example, in some embodiments, the UE **115** may initially utilize a legacy SMS database **185** prior to configuration for use with the system **105**. When the UE **115** is provisioned for use with the system **105** by installing a data network enabled SIM **160** and the application **155**, the system **105** can create a new data network SMS database **190** that is used for SMS messages transmitted and received using the data network enabled SIM **160**.

According to some embodiments, the system **105** is configured to import the content of the legacy SMS database **185** into the new data network SMS database **190**.

FIG. **2** is a flowchart of an example method **200** for adding a UE as an extension on a PBX. The method **200** begins with a user removing **202** a legacy SIM card from their UE. The method **200** then includes the user replacing **204** the legacy SIM with a SIM that is only Internet data network enabled. To be sure, in some embodiments, the new SIM is only enabled to work on Internet data network channels (e.g., using only Internet data protocols, rather than voice channels).

To be sure, cellular services provide both voice channels and data channels for their subscribers or users. Some services allow for simultaneous use of both the voice and data channels, while others allow for use of one or the other, but not both at the same time. Cellular service providers utilize sets of frequencies for voice data, while other frequencies are designated only for data (packet) transmission.

The systems and methods of the present technology utilize only data channels (e.g., frequency bands) for both call sessions and SMS. The UEs are configured to utilize the present technology by provisioning **206**, by a server (such as the system **105** or a third party application service), a dialer and messaging application **155** to the UE **115**. For example, the UE **115** can be used to download the application **155**. The application **155** is stored on the UE **115** and executed by the processor of the UE **115** provide various functionalities.

In one embodiment, method **200** includes the application replacing **208** a native dialer and messaging program on the UE **115**. As mentioned above, the UE **115** comprises an installed data network enabled subscriber identity module (SIM) **160**.

Next, the method **200** includes registering **210** the UE **115** for direct calls and calls from other users on the business telephone system **105** and transferring **212** a mobile telephone number associated with the UE **115** to a private branch exchange (PBX) **150**.

The method **200** then includes attaching **214** the mobile telephone number an extension on the PBX **150**. The user can then utilize their UE **115** as if it were physically present in an office, such as a desk phone. For example, if another caller calls the extension of a user who has registered their UE **115** on the business telephone system **105**, the PBX **150**

will identify the UE **115** as any extension and ring the extension, which causes the UE **115** to ring.

To be sure, because the UE **115** is provisioned with a data network enabled SIM **160**, calls and SMS messages for the UE **115** are not transmitted and received using an Unstructured Supplementary Service Data (USSD) protocol but through the dialer and messaging application **155** using a form of data transmission protocol that provides Internet access.

In some embodiments, the installation of the application **155** disables the cellular service **170** as a means for placing or receiving calls, except for emergency calls (in some embodiments). Thus, all calls are placed and received through the dialer and messaging application **155** using data channels **165** of the cellular service **170**. Stated otherwise, the dialer and messaging application **155** renders the UE **115** unable to utilize the voice channels **175** of cellular services **170**. The UE **115** executes all call sessions through the dialer and messaging application **155** using only data channels **165** of the cellular service **170**.

In some embodiments, the UE **115** can utilize both the voice channels and data channels of the cellular service **170** using the application **155**. The application **155** is configured to actively select a best performing channel, whether that channel is a voice channel or data channel of a cellular service or alternatively a data channel of a WiFi or other fixed location data network.

FIG. **3** is a flowchart of an example method **300** that can be executed to allow a UE to utilize the present technology. For example, the method **300** can include replacing **302** a native cellular service on a user equipment (UE). Next, the method **300** includes enabling **304** a dialer and messaging application on the UE that allows for calling and messaging services by the UE using only data protocols of an associated wireless network. Again, the wireless network could include a cellular service or a fixed access network, such as a WiFi network or home network.

Enabling the dialing and messaging application can include installing the application, which sets an icon on a UI (user interface) of the UE. In some embodiments, the application disables or replaces the native dialer and messaging applications that were previously utilized by the UE and sets the network enabled dialing and messaging application as the primary application for facilitating calls and messaging. Thus, when the user of the UE desires to place or answer a call, the dialing and messaging application will be used rather than the native dialing features of the UE. In some embodiments, the native dialer can still be enabled to allow the user of the UE to place emergency phone calls.

The method **300** can include facilitating **306** call sessions for the UE on Internet data channels of a wireless network using the dialer and messaging application.

The method **300** can optionally include adding **308** the UE as an extension on a PBX system, although it will be understood that utilizing the UE through a PBX system is not required in all embodiment. To be sure, the application **155** can allow the UE **115** to engage in call sessions on the data channels of the cellular service without adding the UE **115** into a PBX as part of the enabling process. Embodiments where the UE is added to a PBX are useful when the end user desires to utilize their UE (typically a mobile computing device) as a softphone device. For example, the user can utilize a mobile phone as an end point for their office extension. When the user is traveling the user can utilize their UE as if they were using their office phone.

FIG. **4** illustrates an exemplary computing system **400** that may be used to implement embodiments of the disclosed technology. The computing system **400** may be implemented in the contexts of the likes of computing systems, networks, servers, or combinations thereof. The computing system **400** includes one or more processor units **410** and main memory **420**. Main memory **420** stores, in part, instructions and data for execution by processor unit **410**. Main memory **420** may store the executable code when in operation. The computing system **400** of FIG. **4** further includes a mass storage device **430**, portable storage device **440**, output devices **450**, user input devices **460**, a graphics display system **470**, and peripheral devices **480**.

The components shown in FIG. **4** are depicted as being connected via a single bus **490**. The components may be connected through one or more data transport means. Processor unit **410** and main memory **420** may be connected via a local microprocessor bus, and the mass storage device **430**, peripheral devices **480**, portable storage device **440**, and graphic display system **470** may be connected via one or more input/output (I/O) buses.

Mass storage device **430**, which may be implemented with a magnetic disk drive, an optical disk drive, or a solid state drive, is a non-volatile storage device for storing data and instructions for use by processor unit **410**. Mass storage device **430** may store the system software for implementing embodiments of the present technology for purposes of loading that software into main memory **420**.

Portable storage device **440** operates in conjunction with a portable non-volatile storage medium, such as a floppy disk, compact disk, digital video disc, or USB storage device, to input and output data and code to and from the computing system **200**. The system software for implementing embodiments of the present technology may be stored on such a portable medium and input to the computing system **400** via the portable storage device **440**.

User input devices **460** provide a portion of a user interface. User input devices **460** may include one or more microphones, an alphanumeric keypad, such as a keyboard, for inputting alpha-numeric and other information, or a pointing device, such as a mouse, a trackball, stylus, or cursor direction keys. User input devices **460** may also include a touchscreen. Additionally, the computing system **400** includes output devices **450**. Suitable output devices include speakers, printers, network interfaces, and monitors.

Graphic display system **470** may include a liquid crystal display (LCD) or other suitable display device. Graphic display system **470** receives textual and graphical information, and processes the information for output to the display device.

Peripheral devices **480** may include any type of computer support device to add additional functionality to the computing system **400**. Peripheral devices **480** may include a GPS navigation device, telematics device (e.g., OnStar), entertainment device, GSM modem, satellite radio, router, and the like.

The components provided in the computing system **400** of FIG. **4** are those typically found in computing systems that may be suitable for use with embodiments of the present technology and are intended to represent a broad category of such computer components that are well known in the art. Thus, the computing system **400** may be a personal computer, handheld computing system, telephone, mobile computing system, workstation, server, minicomputer, mainframe computer, wearable, or any other computing system. The computer may also include different bus configurations, networked platforms, multi-processor platforms, etc. Various operating systems may be used including UNIX,

LINUX, CHROME, WINDOWS, MAC OS, PALM OS, ANDROID, IOS, QNX, and other suitable operating systems.

It is noteworthy that any hardware platform suitable for performing the processing described herein is suitable for use with the embodiments provided herein. Computer-readable storage media refer to any medium or media that participate in providing instructions to a central processing unit (CPU), a processor, a microcontroller, or the like. Such media may take forms including, but not limited to, non-volatile and volatile media such as optical or magnetic disks and dynamic memory, respectively. Common forms of computer-readable storage media include a floppy disk, a flexible disk, a hard disk, magnetic tape, any other magnetic storage medium, a CD-ROM disk, digital video disk (DVD), Blu-ray Disc (BD), any other optical storage medium, RAM, PROM, EPROM, EEPROM, FLASH memory, and/or any other memory chip, module, or cartridge.

The present technology may be implemented as a web-server or in a cloud-based computing environment. A cloud-based computing environment is a resource that typically combines the computational power of a large grouping of processors and/or that combines the storage capacity of a large grouping of computer memories or storage devices. For example, systems that provide a cloud resource may be utilized exclusively by their owners; or such systems may be accessible to outside users who deploy applications within the computing infrastructure to obtain the benefit of large computational or storage resources.

The cloud may be formed, for example, by a network of web servers, with each web server (or at least a plurality thereof) providing processor and/or storage resources. These servers may manage workloads provided by multiple users (e.g., cloud resource customers or other users). Typically, each user places workload demands upon the cloud that vary in real-time, sometimes dramatically. The nature and extent of these variations typically depend on the type of business associated with the user.

The present technology is described above with reference to exemplary embodiments. Therefore, other variations upon the exemplary embodiments are intended to be covered by the present technology.

What is claimed is:

1. A method for integrating a user equipment (UE) with a business telephone system, comprising:

provisioning, by a server, a dialer and messaging application to the UE;

replacing a native dialer and messaging program on the UE by the dialer and messaging application, wherein the UE comprises an installed data network enabled subscriber identity module (SIM);

enabling calls and messaging through a session initiation protocol (SIP) server using the dialer and messaging application;

registering the UE for the calls, the calls including direct calls and calls from other users on the business telephone system, the UE configured to be unable to utilize voice channels of a cellular service for placing or receiving the calls, in which all of the calls occur through the dialer and messaging application using Internet data channels of the cellular service;

receiving a request from the dialer and messaging application to add the UE to a private branch exchange (PBX);

attaching a mobile telephone number as an extension on the PBX;

receiving a short message service (SMS) message from the UE on an Internet data channel;

employing, by an intermediary short message service center (SMSC), a standard SMSC to provide its own SMS service, the intermediary SMSC mimicking the functionality of the standard SMSC of the cellular service; and

forwarding the SMS message to a recipient.

2. The method according to claim **1**, further comprising creating a new SMS database for SMS messages transmitted and received using the installed data network enabled SIM.

3. The method according to claim **2**, further comprising importing a legacy SMS database into the new SMS database.

4. The method according to claim **1**, wherein calls and SMS messages are not transmitted and received using an Unstructured Supplementary Service Data (USSD) protocol but through the dialer and messaging application installed on the UE using a data transmission protocol of a cellular network.

5. The method according to claim **1**, wherein enabling the dialer and messaging application comprises:

removing a legacy SIM of the UE provided by a legacy cellular service; and

replacing the legacy SIM with the data network enabled SIM.

6. The method according to claim **1**, wherein the request comprises the mobile telephone number of the UE.

7. The method according to claim **1**, further comprising placing a shortcut icon for the dialer and messaging application on the UE.

8. A system, comprising:

a private branch exchange (PBX);

a server configured to integrate user equipment (UE) onto the PBX by attaching a mobile telephone number of the UE as an extension on the PBX, an application stored on the UE configured to disable or replace a native dialer and messaging program on the UE, the UE not configured to utilize voice channels of a cellular service for placing and receiving calls or messages, the server further configured to receive a short message service (SMS) message from the UE on a data channel and forward the SMS message to a recipient;

an intermediary short message service center (SMSC) that employs a standard SMSC to provide its own SMS service, the intermediary SMSC mimicking the functionality of the standard SMSC of a cellular service; and

a session initiation protocol (SIP) server coupled with the server and the PBX that allows the UE to place and receive calls and messages over data channels of a network.

9. The system according to claim **8**, wherein the UE enables calls and messaging through the SIP server using the application.

10. The system according to claim **8**, wherein the system is configured to facilitate messaging through use of short message peer-to-peer services, extensible messaging and presence protocol (XMPP) services, XAMPP stack packages, or combinations thereof.

11. The system according to claim **8**, wherein the UE can utilize PBX features comprising any of direct calls another extension on the PBX, do not disturb, transfer, car park, intercom, paging, call recording, voicemail to e-mail mes-

saging, one-button automatic call back, hunt group, auto attendant, and any combinations thereof.

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